Fisheries and Oceans Canada | Pêches et Océans Canada
Science | Sciences

CSAS | **SCCS**

Canadian Science Advisory Secretariat | **Secrétariat canadien de consultation scientifique**

Proceedings Series 2010/045 | **Compte rendu 2010/045**

Proceedings of the Central and Arctic Regional Assessment of Isuituq River Arctic Char, Cumberland Sound Area, NU

March 24-25, 2010
Pangnirtung, NU

Michael Papst
Chairperson

Compte rendu de l'évaluation régionale du Centre et de l'Arctique concernant les stocks d'omble chevalier de la rivière Isuituq, dans la zone de la baie Cumberland, au NU

Les 24-25 mars, 2010
Pangnirtung, NU

Michael Papst
Président de réunion

Fisheries and Oceans Canada / Pêches et Océans Canada
Freshwater Institute / Institut des eaux douces
501 University Crescent / 501, University Crescent
Winnipeg MB R3T 2M3

November 2010 | **Novembre 2010**

Canada

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings include research recommendations, uncertainties, and the rationale for decisions made at the meeting. Proceedings also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

Avant-propos

Le présent compte rendu a pour but de documenter les principales activités et discussions qui ont eu lieu au cours de la réunion. Il contient des recommandations sur les recherches à effectuer, traite des incertitudes et expose les motifs ayant mené à la prise de décisions pendant la réunion. En outre, il fait état de données, d'analyses ou d'interprétations passées en revue et rejetées pour des raisons scientifiques, en donnant la raison du rejet. Bien que les interprétations et les opinions contenues dans le présent rapport puissent être inexactes ou propres à induire en erreur, elles sont quand même reproduites aussi fidèlement que possible afin de refléter les échanges tenus au cours de la réunion. Ainsi, aucune partie de ce rapport ne doit être considérée en tant que reflet des conclusions de la réunion, à moins d'indication précise en ce sens. De plus, un examen ultérieur de la question pourrait entraîner des changements aux conclusions, notamment si l'information supplémentaire pertinente, non disponible au moment de la réunion, est fournie par la suite. Finalement, dans les rares cas où des opinions divergentes sont exprimées officiellement, celles-ci sont également consignées dans les annexes du compte rendu.

Proceedings of the Central and Arctic Regional Assessment of Isuituq River Arctic Char, Cumberland Sound Area, NU

March 24-25, 2010
Pangnirtung, NU

Michael Papst
Chairperson

Compte rendu de l'évaluation régionale du Centre et de l'Arctique concernant les stocks d'omble chevalier de la rivière Isuituq, dans la zone de la baie Cumberland, au NU

Les 24-25 mars, 2010
Pangnirtung, NU

Michael Papst
Président de réunion

Fisheries and Oceans Canada / Pêches et Océans Canada
Freshwater Institute / Institut des eaux douces
501 University Crescent / 501, University Crescent
Winnipeg MB R3T

November 2010

Novembre 2010

© Her Majesty the Queen in Right of Canada, 2010
© Sa Majesté la Reine du Chef du Canada, 2010

ISSN 1701-1272 (Printed / Imprimé)
ISSN 1701-1280 (Online / En ligne)

Published and available free from:
Une publication gratuite de :

Fisheries and Oceans Canada / Pêches et Océans Canada
Canadian Science Advisory Secretariat / Secrétariat canadien de consultation scientifique
200, rue Kent Street
Ottawa, Ontario
K1A 0E6

http://www.dfo-mpo.gc.ca/csas/

CSAS@DFO-MPO.GC.CA

Correct citation for this publication:

DFO. 2010. Proceedings of the Central and Arctic Regional Assessment of Isuituq River Arctic Char, Cumberland Sound Area, NU; March 24-25, 2010. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2010/045.

SUMMARY

Fisheries and Oceans Canada's (DFO) Fisheries and Aquaculture Management (FAM) sector requested Science advice on the status of Cumberland Sound Arctic Char (*Salvenius alpinus*) stocks. The Isuituq River system, fished principally at the head of Clearwater Fiord was chosen for assessment. DFO Science has been collecting biological and catch and effort data since 2002 from Clearwater Fiord as part of an ongoing research program in the Cumberland Sound area. This water-body is one of the few in the area for which sufficient data were available for stock assessment analyses. The Isuituq River located at the head of Clearwater Fiord has a population of anadromous Arctic Char that have been fished locally under an exploratory licence since 1997. To determine if a stock has the potential to support a commercial fishery, sustainability of harvest levels must be demonstrated. The assessment is based on the analysis of data collected from the stock either from the fishery (catch-per-unit-effort biological samples) or from fishery independent research survey sampling.

A Regional Advisory Process (RAP) meeting was held in Pangnirtung, NU on March 24-25, 2010 to review the data and analyses from the Isuituq River Arctic Char and to develop Science advice about the status of the stock. Participants included DFO Science, DFO FAM, Pangnirtung Hunter's and Trapper's Association, Government of Nunavut (Fisheries and Sealing), Pangnirtung Fisheries Limited, the universities of British Columbia and Manitoba and Pangnirtung community members. However, few community members were able to attend the meetings. Participants agreed with the findings that the Isuituq River anadromous Arctic Char population appears to be stable and able to withstand the current level of harvest. Science advice resulting from the meeting is published in the Science Advisory report series and the supporting data analyses are published in the Research Document series.

SOMMAIRE

Le secteur de la Gestion des pêches et de l'aquaculture de Pêches et Océans Canada (MPO) a demandé au secteur des Sciences de formuler un avis scientifique sur l'état des stocks d'omble chevalier (*Salvenius alpinus*) de la baie Cumberland. On a choisi le réseau hydrographique de la rivière Isuituq, où la pêche est surtout pratiquée au fond du fjord Clearwater, pour effectuer l'évaluation. Depuis 2002, le secteur des Sciences du MPO recueille des données sur la biologie, les prises et l'effort dans le fjord Clearwater dans le cadre d'un programme de recherche à long terme mené dans le secteur de la baie Cumberland. Ce plan d'eau est l'une des rares zones suffisamment documentées pour que l'on puisse procéder aux analyses nécessaires à l'évaluation des stocks. La rivière Isuituq, qui se jette au fond du fjord Clearwater, abrite une population d'ombles chevaliers anadromes qui fait l'objet d'une pêche locale en vertu d'un permis de pêche exploratoire depuis 1997. Pour déterminer si un stock peut soutenir une pêche commerciale, il faut démontrer que les prélèvements effectués sont durables. L'évaluation est fondée sur l'analyse des données sur le stock provenant de la pêche (prise par unité d'effort, échantillons biologiques) ou d'échantillonnages réalisés dans le cadre de relevés scientifiques indépendants de la pêche.

On a tenu une réunion du processus de consultation scientifique régional (PCSR) à Pangnirtung, NU, les 24 et 25 mars 2010, dans le but de passer en revue les données et les analyses concernant l'omble chevalier de la rivière Isuituq et de formuler un avis scientifique sur l'état du stock. Parmi les participants, mentionnons des représentants du secteur des Sciences du MPO, de Gestion des pêches et de l'aquaculture du MPO, de la Pangnirtung Hunter's and Trapper's Association, du gouvernement du Nunavut (Pêches et Chasse au phoque), de Pangnirtung Fisheries Limited, de l'Université de la Colombie-Britannique, de l'Université du Manitoba ainsi que des membres de la communauté de Pangnirtung. Cependant, peu de membres de la communauté ont pu assister aux réunions. Les participants se sont entendus sur le fait que la population d'ombles chevaliers de la rivière Isuituq semblait stable et en mesure de supporter les prélèvements actuels. L'avis scientifique formulé à la suite de la réunion est publié dans la série des avis scientifiques, tandis que les analyses des données à l'appui sont publiées dans la série des documents de recherche.

INTRODUCTION

A peer review meeting was held in Pangnirtung, Nunavut on March 24-25, 2010. The purpose of this meeting, as described in the Terms of Reference (Appendix 1), was to review scientific information used to assess the population status of Isuituq River system, anadromous Arctic Char (*Salvelinus alpinus*). Participants included Fisheries and Oceans Canada (DFO) Science, DFO FAM, Pangnirtung Hunter's and Trapper's Association (HTA), Government of Nunavut (Fisheries and Sealing), Pangnirtung Fisheries Limited, the universities of British Columbia and Manitoba and Pangnirtung community members (Appendix 2).

REVIEW AND DISCUSSION

The meeting chair, Dr. M. Papst, gave a short introduction and described the purpose of the Science Advisory meeting.

A presentation was given by Les Harris on the historical landings of Arctic Char from the exploratory fishery, subsistence harvest, and the results from the plant sampling program. Following the presentation and discussions, the draft research document and stock advisory report were reviewed. Issues and important points of discussion generated from the meeting are presented.

ASSESSMENT OF ISUITUQ RIVER, ANADROMOUS ARCTIC CHAR

Presenter: Les Harris, DFO Science

Abstract

Arctic Char, *Salvelinus alpinus*, is widely distributed throughout Northern Canada and is an important subsistence and commercial resource throughout much of its range. In the Cumberland Sound region of Nunavut (NU), this species is abundant in numerous waterbodies, several of which likely have commercial potential. Sustainability of harvest levels, however, must first be demonstrated prior to the transition to commercial status. This is typically done through an assessment of data collected as part of an exploratory fishery (STAGE II), which precedes the commercial stage (STAGE III) of a fishery. Data collected as part of the exploratory fishery may be complimented with several years of data collected through fishery independent research surveys conducted by DFO. Here, we present harvest data collected from subsistence and exploratory fisheries and population parameter data collected from DFO research initiatives in the Isuituq River system, NU, specifically at Clearwater Fiord (waterbody code PG080; 66°37' N, 67°52' W). This fishery at Clearwater Fiord is currently fished under an exploratory licence and, in this assessment, the commercial potential of this fishery is evaluated. Since the inception of the exploratory fishery, harvest has varied between 2,298.45 kg to 3,378.91 kg per year with total landings for this exploratory period equal to 3,2151.37 kg round weight per year. Subsistence harvest, in this system is likely low, but variable (157-1,255 fish per year). Subsistence harvest information, however, encompasses only a short time series and has likely been overestimated in some years. Population parameter data (weight, length, condition and age) for Isuituq Arctic Char show a high degree of temporal variation. A lack of negative biological trends in the majority of the parameters examined suggests the Isuituq stock is healthy and is withstanding current harvest levels. That is, the Isuituq fishery appears to be stable and is likely fished at or below the sustainable rate of harvest which suggests that this fishery could transition to commercial status at the current harvest levels. Small increases in quota could be implemented followed by careful monitoring of the fishery. To allow better

assessment of the Isuituq Arctic Char stock and the sustainability of the fishery, population abundance should be determined for this system and information to address whether harvest represents a mixed-stock fishery should be collected.

Detailed Discussion

Only four or five boats actually travel out to Isuituq to subsistence fish throughout the year. This area is important to Pangnirtung residents for other reasons (e.g., hunting) and fishing typically occurs there opportunistically while conducting other activities.

Community participants advised that reports and any other documents presented to the community need to be translated into Inuktituk. It is recommended that the translations which are distributed to Pangnirtung be translated by a Pangnirtung translator as the dialect of Inuktituk varies among communities. All participants agreed that the final documents sent to the community of Pangnirtung will be translated into Inuktitut.

More details about the research dates are needed, as the data are biased by the collection date. Arctic Char migrate upstream into the lakes over a period which is longer than the sampling period for data collection; therefore year to year variations in the data may represent variations in the timing of sampling during the run, rather than variations in the population itself. This topic needs to be expanded on in the document as it is unclear that sampling occurred for only part of the run annually, and that exact dates varied. It should be mentioned that even if the sampling dates were constant from year to year the environmental fluxes would result in different portions of the run being captured in different years. The only way to ensure that variation in data is attributable to changes in the population would be to conduct sampling for not only the entire run, but for multiple days before and after. Lastly, the participants recommend that a table with the dates of research and corresponding environmental factors be included.

The presenter agreed to prepare a table and to include the required information into the documents.

Local knowledge indicates fish populations mix in Cumberland Sound and it is very common to see large numbers of fish in the nets on the last part of the run, during a new moon. This may have bearing on the 2003 data presented which had a very high catch rate compared to other years. There were also lots of fish in the river in 2003.

Stock mixing is also under investigation by a researcher at the University of British Columbia.

All participants agreed that the word *harvest* should be used instead of *exploitation* in the documents.

When participants were asked if locals who fish Isuituq have noticed any change in the length and weight of Isuituq fish they responded that they had not noticed nor heard of any concern regarding changes in weight or length for the Isuituq River Arctic Char population.

The fish plant takes most fish that come to the door because the fish harvesters only bring fish of sellable weight to the plant; under weight fish are kept for subsistence. There is little to no grading occurring at the plant. All fish that come into the plant are counted towards the quota. It was pointed out that the current manager of Pangnirtung Fisheries Limited has decreased the lower limit of fish size purchased from 4lbs to 2lbs.

It was pointed out that Pangnirtung Fisheries Limited is not interested in getting fish from Isuituq River as these fish are small and there are several other waterbodies the plant is more interested in. In addition, the community of Pangnirtung is not interested in increasing the harvest rate for the Isuituq River Arctic Char population. There are other populations the community would be interested in seeing an increase in the allowable harvest because they are closer to Pangnirtung and they have larger fish.

The Isuituq River anadromous Arctic Char population was chosen in response to the DFO FAM's request for advice. This population had sufficient fisheries independent research data to address some of the questions put forward for Cumberland Sound Arctic Char stocks.

When asked if there was hook and line fishing at Isuituq, local participants indicated that there was a lot. There use to be sport fishing that occurred at Isuituq River. But sport fishing no longer exists as the fishing lodge there has been abandoned for the past 10 years and is no longer in use. In the 1970s – 1980s the lodge served people including Pierre Trudeau (PM of Canada).

Participants indicted that Clearwater Fiord and the adjoining waters are not accessed only for fishing. Most people will go to Clearwater to hunt beluga and caribou with fishing being a secondary activity. Clearwater Fiord is one of the most abundant rod and reel fishing spots. You are guaranteed to get a bite with every cast.

The Government of Nunavut has no major plans for increasing sport fishing. The wildlife officer hands out the sport fishing licences and should be tracking them, but the licences are not for any specific region in Nunavut and therefore impossible to know where people are fishing. Without creel survey information it would be impossible to quantify sport fishing at Isuituq.

Local participants provided the following information relevant to the assessment:

Clearwater is very salty and green-brown in colour.

In the mixed stock there are potentially three contributing populations: Mituituk River (smaller then Isuituq), Iqualugaaruit (Shark Fiord) (good size), and Isuituq River.

Arctic Char move around the shore area mostly but in July and in August they move into deeper coastal water to feed.

There is lots of Capelin (*Mallotus villosus*) now in Cumberland Sound and more char (from Isuituq) are eating them making their flesh white. There are lots of other locations that are closer to Pangnirtung where the fish have red flesh which is more desirable (especially to Pangnirtung Fisheries). The majority of the subsistence fishing occurs at locations closer to Pangnirtung. The far distance and the white flesh of the fish make Isuituq a less desirable location to fish at.

Local knowledge suggests that the char of Isuituq may spawn in the river.

Subsistence fishing is considered to be limited.

The exploratory licence for the Isuituq River population is only harvested in summer, not in the winter.

If the rivers are too low and fish cannot make it into the lakes then they will remain in the bay in salt water for the winter. Some small bays around Irvine Inlet have fish all winter long in salt water.

When asked if community members in Pangnirtung would be interested in DFO doing a mark-recapture study to estimate the size of the Isuituq Arctic Char population one participant indicate that he would have no problem but some people might. When asked about using a weir, participants indicated that if the fish were handled with respect there should be no problem. However, other people in the community should be asked.

Results from the fisheries independent study conducted by DFO were presented and the findings were supported by all participants including the local fishermen of Pangnirtung. Due to the paucity of biological data in general and the lack of consistency and reliability of catch and effort data from local fish harvesters, these data were presented and discussed but were not included in the analysis. This led to a discussion regarding the importance of accurate harvest recording and reporting by local fish harvesters, using the DFO log book system. This discussion provided DFO Science and DFO FAM with information on how to make log books more accessible to local fish harvesters. Distributing and collecting log books should be the responsibility of the HTA and they should ensure that log books are accurately completed and submitted to DFO FAM prior to the submitting the following year's licence applications. Having this additional information will allow DFO biologists to further assess the impacts of fisheries on this system and more accurately define the status of Arctic Char in the Isuituq River system.

The information provided by this assessment indicated that the anadromous Arctic Char population in the Isuituq River system is stable and able to withstand present harvest levels. The community showed support for fish tagging projects in the future, as fish tagging projects may provide direct population estimates. However, since there is little interest from the community and Pangnirtung Fisheries Limited to increase the harvest level on the Isuituq River Arctic Char population for domestic or commercial fishing, a tagging project is presently not recommended.

APPENDIX 1. TERMS OF REFERENCE

Arctic Char Assessment, Isuituq River-Cumberland Sound Area, NU
Regional Advisory Meeting

March 24-25, 2010

Pangnirtung, Nunavut
Meeting Chairperson: Michael Papst

Background

The Isuituq River is one of several water-bodies in the Cumberland Sound area that is presently fished for Arctic Char under an exploratory fishing licence, mainly at the mouth of the river at the head of Clearwater Fiord. The objective of fishing under an exploratory licence (Stage II) is to determine whether a population can sustain a commercially viable operation and to collect biological data in order to build a preliminary database on stock abundance and distribution. An analysis of biological (age, length and weights) and catch and effort data allows Science to assess the status of Arctic Char populations, vulnerability to exploitation at exploratory harvests rates, and advice on converting an exploratory fishery to a commercial fishery. Such data also provides a reliable baseline for future fisheries stock assessments. Biological and catch and effort data are requested as a licence condition for exploratory fisheries following a five-year exploratory fishery protocol. For some water-bodies, these types of data are also collected through Fisheries and Oceans Canada (DFO) Science's stock assessment research program as fishery independent sampling. This is the case in the Isuituq system. Fisheries and Aquaculture Management (FAM) Sector of DFO has requested that Science provide an updated summary of information collected from Cumberland Sound Arctic Char stocks. This Regional Advisory Process (RAP) will provide an update on the status of Isuituq Arctic Char and recommend a long-term plan for this fishery.

Objectives

The following objectives will be addressed:

- assess and report on the current status of Isuituq system Arctic Char, including a review of all new information;
- highlight sources of uncertainty in the assessment, and where appropriate, consider alternative analytical analyses for the assessment;
- provide advice on the transition of the exploratory fishery into a commercial fishery, which would include a total sustainable harvest level for Isuituq Arctic Char; and
- develop a plan to assess the long-term sustainability of the commercial fishery (i.e., identify the information needs, timeframes, etc. including environmental monitoring protocols relevant to the sustainability of the fishery).

Products

A Canadian Science Advisory Secretariat (CSAS) Research Document will be produced from the working paper and will be presented and reviewed at the meeting. The advice from the meeting will be published as a Science Advisory Report. Finally, a proceedings report summarizing the deliberations of the participants will be published in the CSAS Proceedings Series.

Invited Participants

Invitations will be sent to Pangnirtung fish harvesters, Pangnirtung Hunters and Trappers Organization (HTO), Government of Nunavut (Fisheries and Sealing), Pangnirtung Fisheries Ltd., DFO Science and Fisheries Management and an external expert from the University of British Columbia.

APPENDIX 2. Meeting Participants.

Name	Affiliation	e-mail address
Andrew Dialla (interpreter)	Pangnirtung	andrewdialla@yahoo.ca
Les Harris (presenter)	DFO Science	Les.N.Harris@dfo-mpo.gc.ca
Tyler Jivan	DFO FAM	Tyler.Jivan@dfo-mpo.gc.ca
Patrick Kilabuk	Pangnirtung HTA	
Jonah Kilabuk (interpreter)	Pangnirtung	jkilabuk@qiniq.com
Michael Kissak	Pangnirtung HTA	
Tracey Loewen	University of Manitoba, DFO Scienc	Tracey.Loewen@dfo-mpo.gc.ca
Jean-Sébastien Moore	University of British Columbia	jsmoore@zoology.ubc.ca
Dr. Michael Papst (Chair)	DFO Science emeritus	mpapst@scouts.ca
Zoya Pawlychyn (rapporteur)	DFO Science	Zoya.Pawlychyn@dfo-mpo.gc.ca
Marie-Julie Roux	DFO Science	Marie-Julie.Roux@dfo-mpo.gc.ca
Kendra Ulrich	Pangnirtung Fisheries	kulrich@qiniq.com
Simon Wiley		Simon.Wiley@dfo-mpo.gc.ca
Angela Young	Government of Nunavut	ayoung@gov.nu.ca

APPENDIX 3. Agenda

Arctic Char Assessment, Isuituq River-Cumberland Sound Area, NU

March 24-25, 2010
Pangnirtung, NU
(9:00 AM to 5:00 PM)

Chair Person: Dr. Michael Papst

March 24, 2010

Time		Presenter
9:00	Welcome and Introductions	Dr. M. Papst
9:15	Purpose of Meeting	Dr. M. Papst
9:30	Presentation of Background Information	Les Harris
10:15	Break (refreshments provided)	
10:30	Presentation of Methods	Les Harris
12:00	Break for Lunch	
1:00	Presentation of Stock Assessment Analysis and Results	Les Harris
2:45	Break (refreshments provided)	
3:00	General Discussion	
4:45	Overview of accomplishments of the day	Dr. M. Papst
	Overview of itinerary for tomorrow	Dr. M. Papst
5:00	Meeting Adjourned	Dr. M. Papst

March 25, 2010

Time		Presenter
9:00	Welcome and Overview of itinerary	Dr. M. Papst
9:15	Review of wording and content in general introduction	Les Harris
10:15	Break (refreshments provided)	
10:30	Review of wording and content of methods and analysis	Les Harris
12:00	Break for Lunch	
1:00	Review of wording and content of results	Les Harris
2:30	Break (refreshments provided)	
3:00	Review of wording and content discussion and conclusion	Les Harris
4:30	Overview of accomplishments of this meeting	Dr. M. Papst
4:45	Overview of next steps for all participants	Dr. M. Papst
5:00	Meeting Adjourned	Dr. M. Papst